Title (en)

SEMICONDUCTOR IMAGING ELEMENT

Title (de)

HALBLEITER-BILDGEBUNGSELEMENT

Title (fr)

ELEMENT SEMICONDUCTEUR DE FORMATION D'IMAGE

Publication

EP 2023613 A1 20090211 (EN)

Application

EP 07742925 A 20070508

Priority

- JP 2007059490 W 20070508
- JP 2006132957 A 20060511

Abstract (en)

A signal charge corresponding to an incident light quantity is accumulated in a first node (N1) of each pixel circuit (10). An accumulated charge exhaust circuit (20) includes each of first nodes (N1) of the plurality of pixel circuits (10) belonging to the same pixel group, and a second node (N2) connected through discharge gates (DG) functioning as variable resistance elements. Second node (N2) functions as a floating drain during an ON period of a control switch (24), while accumulating the signal charge overflowing from each pixel circuit (10), in a capacitor (22) during an OFF period of control switch (24) provided at an intermediate timing in one frame period. When the incident light to the pixel group is intense, a resistance value of each discharge gate (DG) is lowered in response to an increase of the signal charge accumulated in capacitor (22), so that the signal charge accumulated in each pixel circuit can be exhausted once at the above intermediate timing.

IPC 8 full level

H01L 27/146 (2006.01); **H04N 5/335** (2006.01); **H04N 5/347** (2011.01); **H04N 5/355** (2011.01); **H04N 5/359** (2011.01); **H04N 5/369** (2011.01); **H04N 5/374** (2011.01)

CPC (source: EP US)

H01L 27/14609 (2013.01 - EP US); **H01L 27/14641** (2013.01 - EP US); **H01L 27/14643** (2013.01 - EP US); **H04N 25/575** (2023.01 - EP US); **H04N 25/59** (2023.01 - EP US); **H04N 25/77** (2023.01 - EP US); **H04N 25/778** (2023.01 - EP US)

Cited by

US9001245B2; FR2961347A1; EP2346079A1; US2012002089A1; US8592740B2; US11825225B2; WO2011091785A1

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR

Designated extension state (EPC)

AL BA HR MK RS

DOCDB simple family (publication)

EP 2023613 A1 20090211; **EP 2023613 A4 20100505**; CN 101444085 A 20090527; JP 2007306334 A 20071122; JP 3996618 B1 20071024; RU 2008148834 A 20100620; RU 2427974 C2 20110827; TW 200807703 A 20080201; US 2009101914 A1 20090423; WO 2007132695 A1 20071122

DOCDB simple family (application)

EP 07742925 A 20070508; CN 200780017004 A 20070508; JP 2006132957 A 20060511; JP 2007059490 W 20070508; RU 2008148834 A 20070508; TW 96116663 A 20070510; US 22715907 A 20070508